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WOLF GREENFIELD (Microsoft Corporation) C/O WOLF, GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206				SURVILLO, OLEG		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,217	ZUBERI, KHAWAR M.	
	Examiner	Art Unit	
	OLEG SURVILLO	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 March 2008.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-28 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-28 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 18 July 2003 and 16 March 2007 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Comments Regarding Examination

1. It came to Examiner's attention that recited first and second "network interface" is broader than Network Interface Controller (NIC) that is referred to in the Detailed Description of the invention. As a result, "network interface" may include additional elements beyond those of a NIC, which affects claim interpretation. As an example, "network interface" may include a program component since both a network interface and a program component are a part of a multiple network interface device, as presently claimed. Applicants are advised to amend each of independent claims to recite "network interface controller (NIC)" in place of "network interface" such that claim language is consistent with of the detailed description of the invention.

It is also being noted that the invention as titled and as described in the specification is mainly focused on operation of Remote Direct Memory Access Enabled NICs. However, each of independent claims is lacking this essential element of the invention. Applicants are advised to amend independent claims to bring the limitation of dependent claim 6 (and corresponding claims 13, 20, and 27) that would specify that NICs operate under a RDMA protocol in order to make independent claims commensurate with the scope of the invention.

It is noted that no rejections or objections have been made in this Office action as a result of above-made comments. However, Applicants are encouraged to make suggested amendments in order to advance the prosecution of this application to its completion.

Response to Amendment

2. Claims 1-28 remain pending in the application. Claims 1 and 15 are currently amended. No claims have been canceled. No new claims have been added.

Applicants submitted that independent claims 1 and 15 have been amended to more clearly distinguish over the cited reference (see page 9, as filed, of Remarks). Applicants are advised to make corresponding amendments to independent claims 8 and 22 for consistency.

Response to Arguments

3. With regard to the Applicant's remarks filed on March 5, 2008:
regarding objection to the specification, Applicant's amendment has been fully considered and is sufficient. Therefore, the objection has been withdrawn.

Regarding the rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Boyd in view of Applicant's admitted prior art, Applicant's arguments have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of the newly discovered references.

As to claim 1, Applicant argued, among other things, that since Boyd describes sharing memory regions between primary RNIC and Alternate RNIC, Boyd appears to teach away from claim 1 that recites that "the second network interface has no knowledge of the identifier and the associated data field". Thus, a combination of Boyd

and the Applicant's admitted prior art would not render claim 1 obvious. This argument is persuasive.

As to claim 8, Applicant argued, among other things, that in the cited portion of Hilland does not teach searching the list of identifiers for the identifier, as recited in claim 8. This argument is persuasive.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 6, 7, 15, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Craft et al. (US Patent No.: 6,687,758 B2).

As to claim 1, the preamble has been given patentable weight since the claim body refers back to the preamble. See "the second network interface" and "the multiple network interface device" at lines 1-2 of the claim body.

As to claim 1, Applicant's admitted prior art shows a method of transferring control between a first network interface and at least a second network interface in a multiple network interface device [as the route the data takes through the Internet changes, it is possible that the path chosen from the first machine to the second machine will change in a manner that causes the path between these two machines to

change from NIC 1 to NIC2 in machine 1] (par. [0005]), after the first network interface sends an identifier, the identifier associated with a memory location in the multiple network interface device [the protocol associates the memory in the first machine with a handle referred to as a STag. ...a NIC in the first machine generates the STag. The STag is then sent to the second machine] (par. [0004]), to a second device [the STag is then sent to the second machine] (par. [0004]), the identifier and the associated data field capable of being received by the second network interface in the multiple network interface device [...the route changes to one which uses NIC 2 before machine 2 sends data to machine 1, machine 2 will return data with an STag that is unknown to NIC 2] (par. [0005]). Applicant's admitted prior art also shows that the second network interface has no knowledge of the identifier and the associated data field [returned data with an STag is unknown to NIC 2] (par. [0005]). Applicant's admitted prior art further shows that identifiers are generated by the first network interface and are associated with memory locations in multiple network interface device memory [the protocol associates the memory in the first machine with a handle referred to as a STag.a NIC in the first machine generates the STag].

Applicant's admitted prior art does not show the particular steps recited in the claim for handling identifiers generated by one NIC and received by another NIC in the same machine, in cases when control is transferred [paths changed] between a first network interface and at least a second network interface in a multiple network interface device.

In particular, Applicant's admitted prior art does not show:

receiving a message from the second network interface in the multiple network interface device by a program component of the multiple network interface device, the message indicating the reception of the identifier and the associated data field from the second device;

passing the identifier to the program component;

querying the first network interface to supply the program component with a list of identifiers;

identifying, by the program component, that the first network interface generated the identifier; and

transmitting a memory location associated with the identifier to the second network interface, the second network interface capable of transmitting the associated data field to the memory associated with the identifier.

Craft shows a method for transferring control between a first network interface and at least a second network interface in a multiple network interface device (abstract, col. 6 lines 36-42), the method comprising:

receiving a message from the second network interface in the multiple network interface device [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver] (col. 6 lines 43-47) by a program component of the multiple network interface device [at least one or more of the INIC device driver (64), the ATCP stack (62), and the port aggregation driver (66)] (Fig. 1), the message indicating the reception of the identifier and the associated data field from the second device, wherein the second network interface has no knowledge of the identifier and the

associated data field [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver, which alerts the port aggregation driver (66) of fast-path connection migration] (col. 5 lines 30-34);

passing the identifier to the program component [passing the packet that includes identifier in the packet summary to the INIC device driver] (col. 4 lines 30-43; col. 6 lines 43-47);

querying the first network interface to supply the program component with a list of identifiers [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack, wherein CCB contains a list of identifiers] (col. 3 line 59 to col. 4 line 9; col. 6 lines 47-53);

identifying, by the program component, that the first network interface generated the identifier [the ATCP stack maintains a list of the CCBs that have been offloaded to INICs] (col. 6 lines 47-49); and

transmitting a memory location associated with the identifier to the second network interface [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack for processing the packet, and subsequently handing out the CCB to the INIC 22, which is now associated with the connection] (col. 6 lines 54-57), wherein the second network interface is capable of transmitting the associated data field to the memory location associated with the identifier when programmed with the CCB in the same way as the first network interface was capable of performing the recited function prior to migration of the fast-path connection (col. 4 lines 30-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Applicant's admitted prior art and those of Craft, as discussed above, in order to provide a method of handling received packets when a packet received by one NIC is being handled by other NIC in the same device (col. 6 lines 36-42 in Craft).

As to claim 1, it is noted that the limitation of "the second network interface capable of transmitting the associated data field to the memory location associated with the identifier" does not require the second network interface to actually transmit the associated data, but only being capable of doing so. It is submitted that a network interface is inherently capable of being programmed to perform the recited functionality. Applicants are advised to amend the claim to explicitly recite the second network interface transmitting the associated data field to the memory location associated with the identifier.

As to claim 6, Applicant's admitted prior art in view of Craft shows that the first network interface and the second network interface operate under a remote direct memory access (RDMA) protocol (par. [0003]-[0005] in Applicant's admitted prior art; col. 4 lines 40-42 in Craft).

As to claim 7, Applicant's admitted prior art in view of Craft shows that the first network interface and the second network interface operate under a remote direct

memory access (RDMA) protocol over TCP/IP protocol (par. [0003]-[0005] in Applicant's admitted prior art; col. 2 lines 54-55, col. 3 lines 62-63 and col. 4 lines 40-42 in Craft).

As to claim 15, Applicant's admitted prior art in view of Craft shows a computer readable medium having stored therein instructions for performing acts of method 1, as discussed above (col. 1 lines 5-10 in Craft).

As to claims 20 and 21, Applicant's admitted prior art in view of Craft shows all the elements, as discussed above regarding corresponding claims 6 and 7.

6. Claims 2, 3, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Craft et al. and in further view of Recio et al. ("An RDMA Protocol Specification (Version 1.0)") - submitted in the IDS dated 06/06/05, Doc. No.: A8.

As to claim 2, Applicant's admitted prior art in view of Craft shows that the state of the CCB is updated when packet is processed (col. 6 lines 54-56 in Craft).

Applicant's admitted prior art in view of Craft does not show that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device.

Recio shows that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device (page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Applicant's admitted prior art in view of Craft by having the identifier being invalidated under control of a bit field added to the identifier and the associated data field received from the second device in order to prevent a remote host from subsequent access to the memory location associated with the identifier, which is the feature provided by the RDMA protocol specification, wherein both Applicant's admitted prior art and Craft are using DMA for data transfer.

As to claim 3, Applicant's admitted prior art in view of Craft and in further view of Recio shows that if the identifier has been invalidated, the associated data field is discarded [invalidating STag prevents access to a memory location associated with the identifier] (page 5 lines 15-24; page 12 lines 46-50; page 21 in Recio).

As to claims 16 and 17, Applicant's admitted prior art in view of Craft and in further view of Recio shows all the elements, as discussed above regarding corresponding claims 2 and 3.

7. Claims 4, 5, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Craft et al. and in further view of Starr et al. (US Patent No.: 6,807,581 B1).

As to claim 4, Applicant's admitted prior art in view of Craft shows that storage (23) may be a separate category of the same memory as memory (21) (col. 2 lines 20-

24 in Craft). Applicant's admitted prior art in view of Craft does not explicitly show that the memory location is random access memory.

Starr shows that a memory may be composed of random access memory (col. 6 lines 10-14).

It would have been obvious to one of ordinary skill in the art to modify the method of Applicant's admitted prior art in view of Craft by having the memory location of storage (23) in Craft being a random access memory in order to allow the stored data at the storage (23) of Craft to be accessed in any order, regardless of its physical location and whether or not it is related to the previous piece of data.

As to claim 5, Applicant's admitted prior art in view of Craft shows all the elements except for the program component being a computer operating system.

Starr shows a program component being a computer operating system [file system (23)] (col. 6 lines 15-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Applicant's admitted prior art in view of Craft by having the program component being a computer operating system in order to utilize a high level software entity that contains general knowledge of the organization of information on storage units and file caches, and provides algorithms that implement the properties and performance of the storage architecture (col. 6 lines 15-19 in Starr).

As to claims 18 and 19, Applicant's admitted prior art in view of Craft and in further view of Starr shows all the elements, as discussed above regarding corresponding claims 4 and 5.

8. Claims 8-14 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Craft et al. in view of Starr et al. and in further view of Recio et al. ("An RDMA Protocol Specification (Version 1.0)").

As to claim 8, the preamble has been given patentable weight since the claim body refers back to the preamble. See "the first network interface" and "the host computer" at lines 2-3 of the claim body.

As to claim 8, Applicant's admitted prior art shows a method of transferring control between a first network interface and at least a second network interface in a host computer including the first network interface and the second network interface [as the route the data takes through the Internet changes, it is possible that the path chosen from the first machine to the second machine will change in a manner that causes the path between these two machines to change from NIC 1 to NIC2 in machine 1] (par. [0005]), the method comprising:

receiving an identifier from a remote computer by the at least a second network interface [...the route changes to one which uses NIC 2 before machine 2 sends data to machine 1, machine 2 will return data with an STag that is unknown to NIC 2] (par. [0005]), the identifier generated by the first network interface and associated with a memory location in the host computer [the protocol associates the memory in the first

machine with a handle referred to as a STag. ...a NIC in the first machine generates the STag. The STag is then sent to the second machine] (par. [0004]), wherein the second network interface has no knowledge of the identifier and the associated data field [returned data with an STag is unknown to NIC 2] (par. [0005]).

Applicant's admitted prior art further shows that identifiers are generated by the first network interface and are associated with memory locations in multiple network interface device memory [the protocol associates the memory in the first machine with a handle referred to as a STag. ...a NIC in the first machine generates the STag].

Applicant's admitted prior art does not show the steps of:
sending a message to a program component indicating the reception of the identifier, the program component configured to query the first network interface for a list of identifiers;

passing the identifier received from the remote computer to the program component;

searching the list of identifiers;
if the list of identifiers includes the identifier received from the remote computer, receiving a memory location associated with the identifier; and
if the list of identifiers does not include the identifier received from the remote computer, invalidating the identifier received from the remote computer.

Craft shows a method for transferring control between a first network interface and at least a second network interface in a host computer (abstract, col. 6 lines 36-42), the method comprising:

sending a message to a program component indicating the reception of the identifier [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver, wherein a program component is interpreted to include at least one or more of the INIC device driver (64), the ATCP stack (62), and the port aggregation driver (66)] (col. 6 lines 43-47; Fig. 1), the program component configured to query the first network interface for a list of identifiers [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack, wherein CCB contains a list of identifiers] (col. 3 line 59 to col. 4 line 9; col. 6 lines 47-53); and

passing the identifier received from the remote computer to the program component [passing the packet that includes identifier in the packet summary to the INIC device driver] (col. 4 lines 30-43; col. 6 lines 43-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Applicant's admitted prior art and those of Craft, as discussed above, in order to provide a method of handling received packets when a packet received by one NIC is being handled by other NIC in the same device (col. 6 lines 36-42 in Craft).

As to claim 8, it is noted that the limitation of "the program component configured to query" does not require the program component to actually query the first network interface, but only being capable of doing so. It is submitted that a program component is inherently capable of being coded to perform the recited functionality. Applicants are advised to amend the claim to explicitly recite the second network interface transmitting the associated data field to the memory location associated with the identifier.

Applicant's admitted prior art in view of Craft does not show the steps of:
searching the list of identifiers;
if the list of identifiers includes the identifier received from the remote computer,
receiving a memory location associated with the identifier; and
if the list of identifiers does not include the identifier received from the remote
computer, invalidating the identifier received from the remote computer.

Starr shows:

searching the list of identifiers [comparing packet summary with CCB hashes and
CCB cache] (Fig. 3 step (110); col. 9 lines 40-44);
if the list of identifiers includes the identifier received from the remote computer,
receiving a memory location associated with the identifier [if the packet summary
matches a CCB, receiving a memory location according to a file system] (Fig. 3 steps
(120) and (122); col. 9 lines 55-61); and
if the list of identifiers does not include the identifier received from the remote
computer [if the packet summary does not match a CCB] (Fig. 3 step (110); col. 9 lines
44-46), [sending packet to stack for slow-path processing] (Fig. 3 step (112); col. 9 lines
44-46).

It would have been obvious to one of ordinary skill in the art at the time of the
invention to modify the method of Applicant's admitted prior art in view of Craft by
searching the list of identifiers and taking an action in response to searching, as
discussed above, in order to determine whether or not received packet can be
processed by the network interface (Fig. 3 of Starr).

Applicant's admitted prior art in view of Craft and in further view of Starr does not show invalidating the identifier received from the remote computer if the list of identifiers does not include the identifier received from the remote computer.

Recio shows invalidating the identifier received from the remote computer (page 5 lines 15-24; page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Applicant's admitted prior art in view of Craft and in further view of Starr by invalidating the identifier received from the remote computer if the list of identifiers does not include the identifier received from the remote computer, and, therefore, the packet is sent to stack for slow-path processing (Fig. 3 step (112) in Starr) in order to prevent a remote host from subsequent access to the memory location associated with the identifier once the packet is processed, which is the feature provided by the RDMA protocol specification, wherein all of Applicant's admitted prior art, Craft, and Starr are using DMA for data transfer.

As to claim 9, Applicant's admitted prior art in view of Craft shows that the state of the CCB is updated when packet is processed (col. 6 lines 54-56 in Craft).

Applicant's admitted prior art in view of Craft and Starr does not show that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device.

Recio shows that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device (page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Applicant's admitted prior art in view of Craft and Starr by having the identifier being invalidated under control of a bit field added to the identifier and the associated data field received from the second device in order to prevent a remote host from subsequent access to the memory location associated with the identifier, which is the feature provided by the RDMA protocol specification, wherein both Applicant's admitted prior art and Craft are using DMA for data transfer.

As to claim 10, Applicant's admitted prior art in view of Craft, Starr, and in further view of Recio shows that if the identifier has been invalidated, the associated data field is discarded [invalidating STag prevents access to a memory location associated with the identifier] (page 5 lines 15-24; page 12 lines 46-50; page 21 in Recio).

As to claim 11, Applicant's admitted prior art in view of Craft shows that storage (23) may be a separate category of the same memory as memory (21) (col. 2 lines 20-24 in Craft). Applicant's admitted prior art in view of Craft does not explicitly show that the memory location is random access memory.

Starr shows that a memory may be composed of random access memory (col. 6 lines 10-14).

It would have been obvious to one of ordinary skill in the art to modify the method of Applicant's admitted prior art in view of Craft by having the memory location of storage (23) in Craft being a random access memory in order to allow the stored data at the storage (23) of Craft to be accessed in any order, regardless of its physical location and whether or not it is related to the previous piece of data.

As to claim 12, Applicant's admitted prior art in view of Craft shows all the elements except for the program component being a computer operating system.

Starr shows a program component being a computer operating system [file system (23)] (col. 6 lines 15-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Applicant's admitted prior art in view of Craft by having the program component being a computer operating system in order to utilize a high level software entity that contains general knowledge of the organization of information on storage units and file caches, and provides algorithms that implement the properties and performance of the storage architecture (col. 6 lines 15-19 in Starr).

As to claim 13, Applicant's admitted prior art in view of Craft shows that the first network interface and the second network interface operate under a remote direct memory access (RDMA) protocol (par. [0003]-[0005] in Applicant's admitted prior art; col. 4 lines 40-42 in Craft).

As to claim 14, Applicant's admitted prior art in view of Craft shows that the first network interface and the second network interface operate under a remote direct memory access (RDMA) protocol over TCP/IP protocol (par. [0003]-[0005] in Applicant's admitted prior art; col. 2 lines 54-55, col. 3 lines 62-63 and col. 4 lines 40-42 in Craft).

As to claim 22, Applicant's admitted prior art in view of Craft, Starr, and in further view of Recio shows a computer readable medium having stored therein instructions for performing acts of method 8, as discussed above (col. 1 lines 5-10 in Craft).

As to claims 23 and 24, Applicant's admitted prior art in view of Craft, Starr, and in further view of Recio shows all the elements, as discussed above regarding corresponding claims 9 and 10.

As to claims 25 and 26, Applicant's admitted prior art in view of Craft, Starr, and in further view of Recio shows all the elements, as discussed above regarding corresponding claims 11 and 12.

As to claims 27 and 28, Applicant's admitted prior art in view of Craft, Starr, and in further view of Recio shows all the elements, as discussed above regarding corresponding claims 13 and 14.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLEG SURVILLO whose telephone number is (571)272-9691. The examiner can normally be reached on M-Th 8:30am - 6:00pm; F 8:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Oleg Survillo
Phone: 571-272-9691

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2142